

RPC1

FLOW CONTROL VALVE PRESSURE AND TEMPERATURE COMPENSATED SERIES 43

SUBPLATE MOUNTING ISO 6263-03

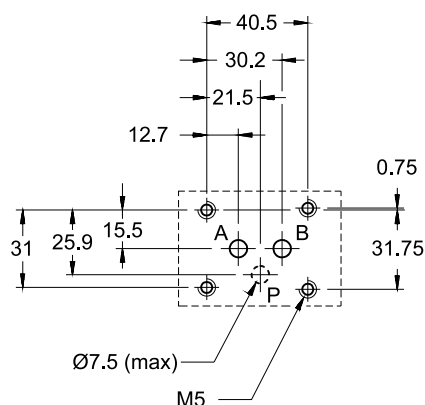
p max **250** bar

Q max (see table of performances)



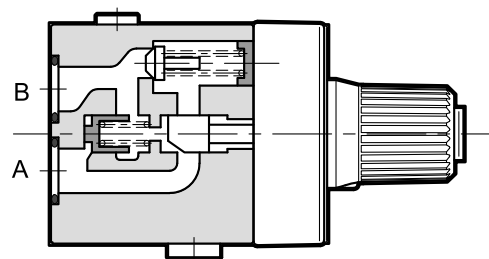
MOUNTING INTERFACE

ISO 6263-03-03-*97
(CETOP 4.5.2-2-03-250)



NOTE: Port T must never be made. The port P must be made only for RPC1 - */CTX. Conversion plates are available.

OPERATING PRINCIPLE



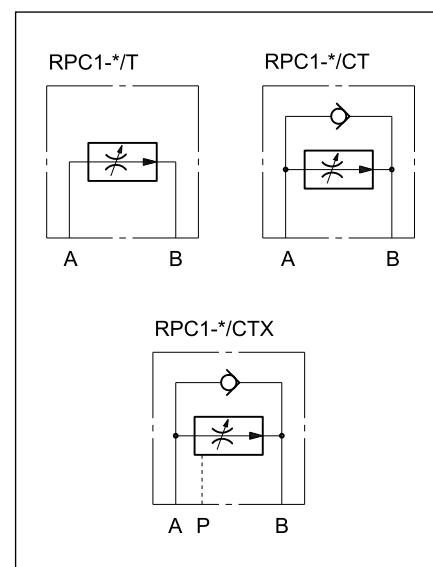
- The RPC1 valve is a pressure and temperature compensated flow control valve.
- Valves are available with three-turn or single turn adjustment knob, with or without check valve for free reverse flow.
- The flow is adjusted by a calibrated knob that modulates the opening of the control gap and can be locked in any adjustment position.
- They are available in seven different flow rate adjustment ranges from 0,5 l/min to 30 l/min.

PERFORMANCE RATINGS

(obtained with mineral oil with viscosity of 36 cSt at 50 °C)

Maximum operating pressure	bar	250
Minimum pressure difference between A and B	bar	10
Check valve cracking pressure	bar	0.5
Max. controlled flow rates	l/min	0.5-1-4-10-16-22-30
Min. controlled flow rate (for 0.5, 1 and 4 l/min)	l/min	0.025
Maximum flow rate in free flow direction	l/min	40
Ambient temperature range	°C	-20 / +60
Fluid temperature range	°C	-20 / +80
Fluid viscosity range	cSt	10 ÷ 400
Fluid contamination degree for controlled flow = 0,5 l/min for controlled flow > 0,5 l/min	according to ISO 4406:1999 class 20/18/15 class 18/16/13	
Recommended viscosity	cSt	25
Mass	kg	1.3
No. of turns of the adjustment knob	RPC1 RPC1-*/M	3 1

HYDRAULIC SYMBOLS



1 - IDENTIFICATION CODE

R	P	C	1	-	/	T	/	/	43	/	
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Pressure compensated flow control valve

Size ISO 6263-03

Controlled flow

0,5 = 0,5 l/min
1 = 1 l/min **16** = 16 l/min
4 = 4 l/min **22** = 22 l/min
10 = 10 l/min **30** = 30 l/min

C = incorporated check valve
 Omit if not required

Temperature compensation

Seals:
 Omit for mineral oils
V = viton for special fluids

Series No.:
 (the overall and mounting dimensions remain unchanged from 40 to 49)

Adjustment knob:
 Omit for three-turn adjustment
M = single-turn (**NOTE**)

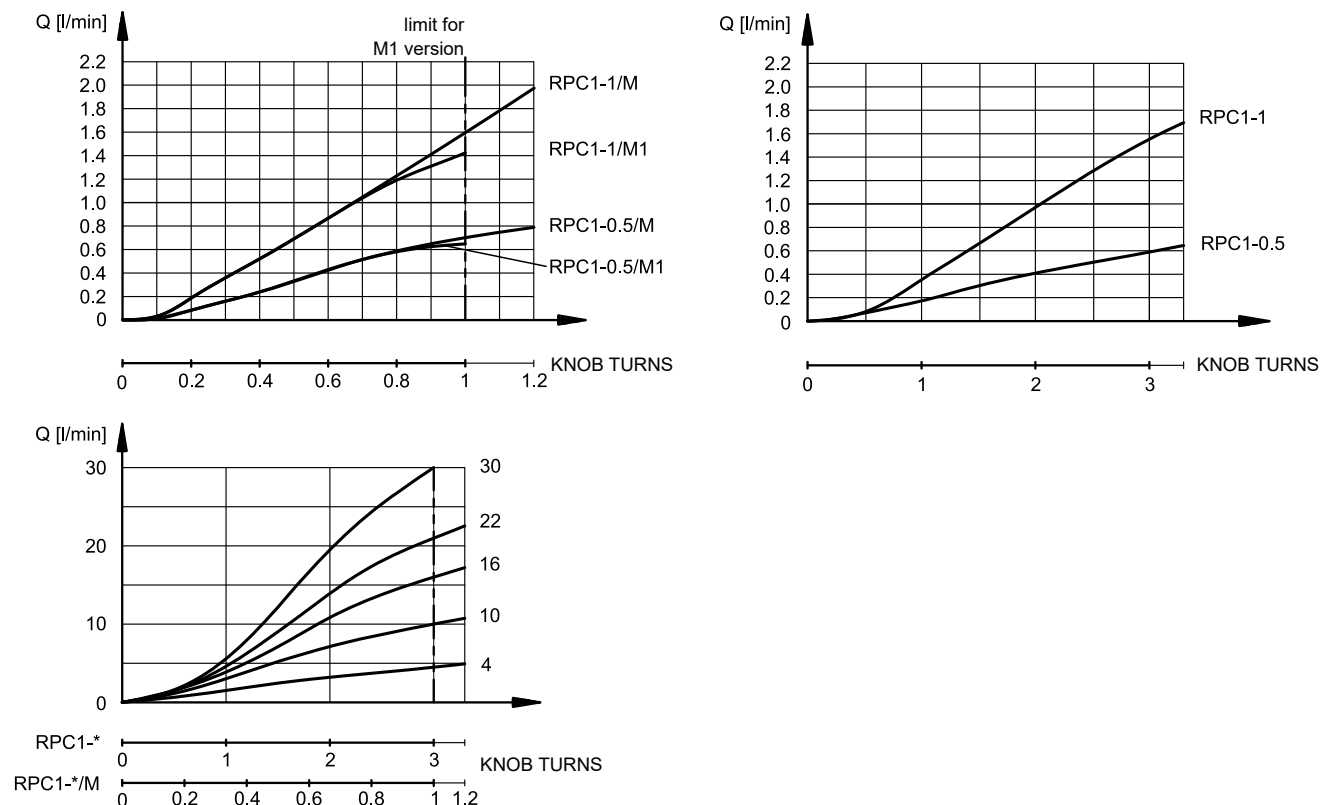
X = with port P for anti-surge pilot signal (available for version with incorporated check valve only)
 Omit if not required.

NOTE: Version **M1** with flowrate limitation is available on request for controlled flow 0.5 and 1 only. Refer to characteristic curves diagrams for flow limits.

2 - CHARACTERISTIC CURVES

(values obtained with viscosity of 36 cSt at 50°C)

ADJUSTMENT



3 - HYDRAULIC FLUIDS

Use mineral oil-based hydraulic fluids HL or HM type, according to ISO 6743-4. For these fluids, use NBR seals. For fluids HFDR type (phosphate esters) use FPM seals (code V). For the use of other kinds of fluid such as HFA, HFB, HFC, please consult our technical department. Using fluids at temperatures higher than 80 °C causes a faster degradation of the fluid and of the seals characteristics.

The fluid must be preserved in its physical and chemical characteristics.

4 - PRESSURE COMPENSATION

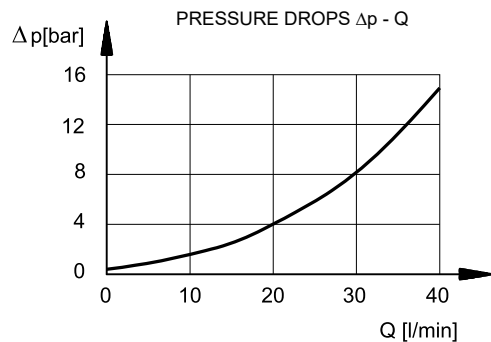
Two throttles in series are in the valve. The first is controlled by the knob mechanism; the second throttle assures a constant pressure drop, controlled by the pressure upstream and downstream the first throttle. In these conditions, the set flow rate value stays constant within a tolerance range of $\pm 2\%$ of the maximum flow controlled by the valve for maximum pressure variation between the inlet and the outlet ports.

5 - TEMPERATURE COMPENSATION

Thermal compensation in the valve is obtained by adopting the principle of restricted fluid passage, so that the fluid is not influenced significantly by variations in oil viscosity. For controlled flows of less than 0,5 l/min and with a temperature difference of 50 °C, flow is increased by about 13% of the set flow value. For higher flow rates, and with the same temperature difference, the flow rise is about 4% of the maximum flow controlled by the valve.

6 - RPC1-*/CT: WITH REVERSE FREE FLOW

The RPC1-*/CT version is equipped with an incorporated check valve to allow free flow in the direction opposite to the controlled flow, B→A.

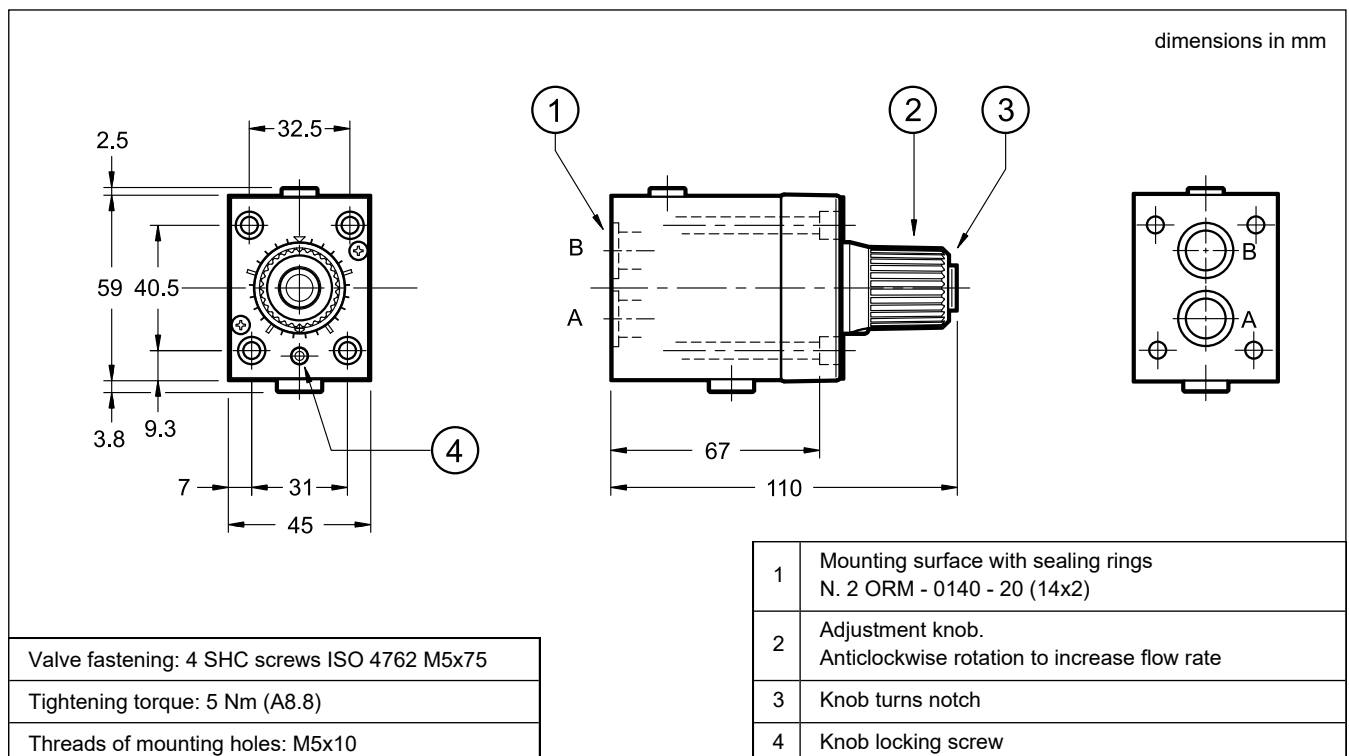


7 - RPC1-*/CTX: HYDRAULIC PILOT SIGNAL

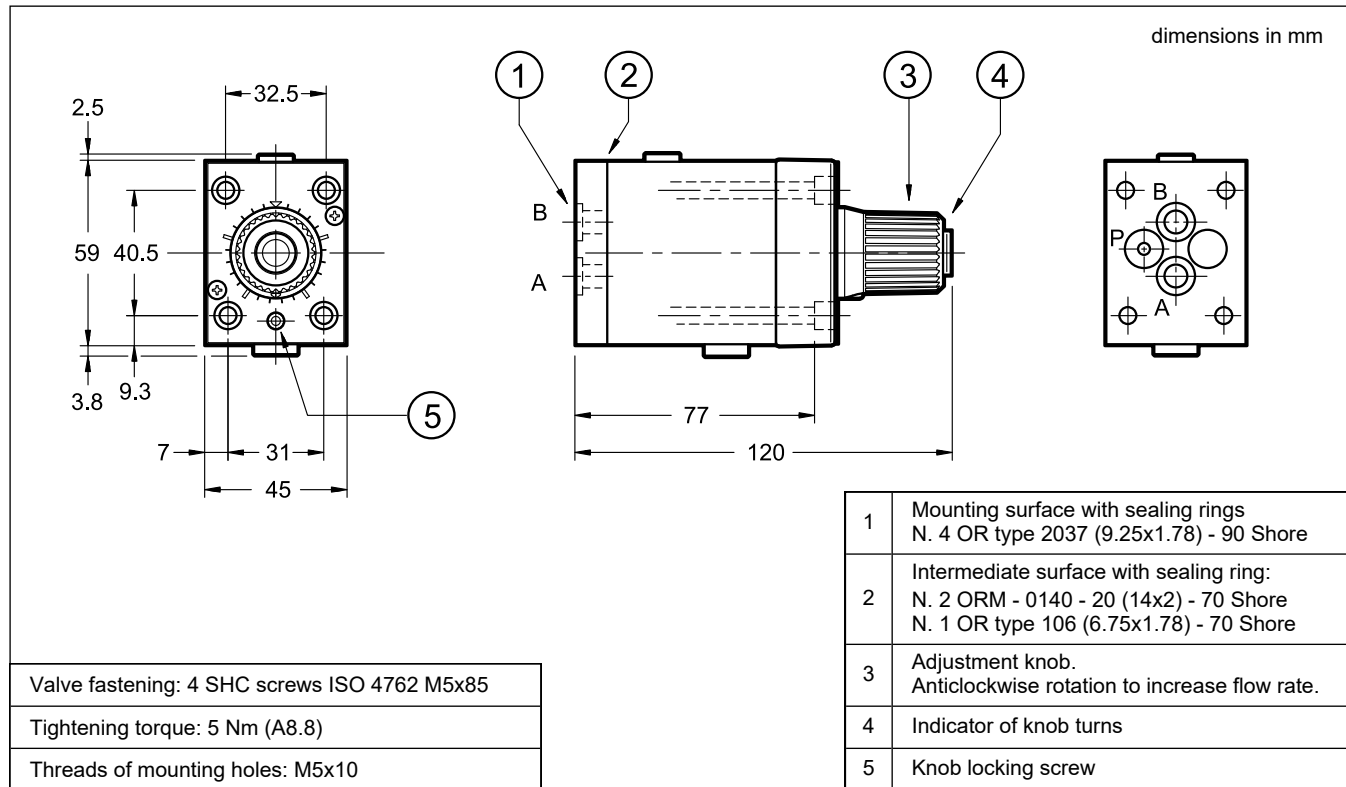
This valve is used for meter-in control and is to be placed downstream of the directional valve.

The pilot signal coming in path P keeps the internal compensator closed thus avoiding the initial flow rate surge that occurs when the directional control valve downstream in the line connects the flow path and the fluid reaches the inlet port of the RPC1 (see the application diagram, point 11).

8 - RPC1-*/T AND RPC1-*/CT OVERALL AND MOUNTING DIMENSIONS



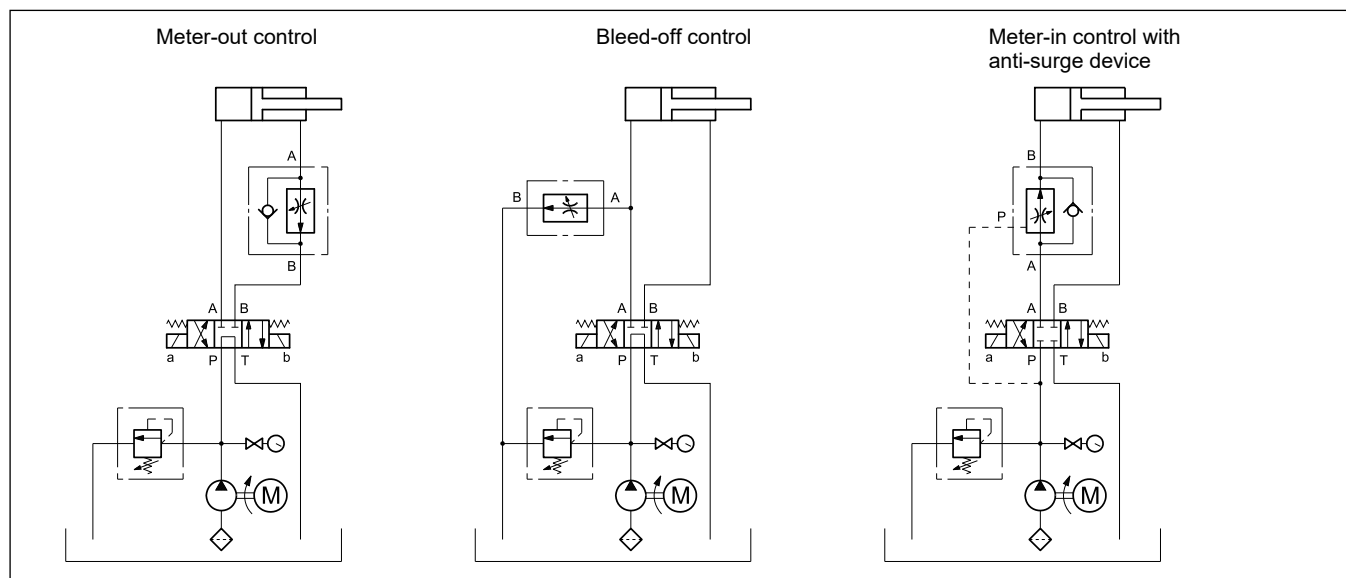
9 - RPC1-*/CTX OVERALL AND MOUNTING DIMENSIONS



10 - SUBPLATES (see catalogue 51 000)

	rear ports 3/8" BSP	side ports 3/8" BSP	ISO 6263 subplate with P and T blind ports
RPC1-*/T, RPC1-*/CT	PMRPC1-AI3G	PMRPC1-AL3G	0113388 P port to be plug (M4)
RPC1-*/CTX	PMMD-AI3G T port to be plug	PMMD-AL3G T port to be plug	-

11 - APPLICATION EXAMPLES





RPC1-T3

PRESSURE AND TEMPERATURE COMPENSATED THREE-WAY FLOW CONTROL VALVE SERIES 41

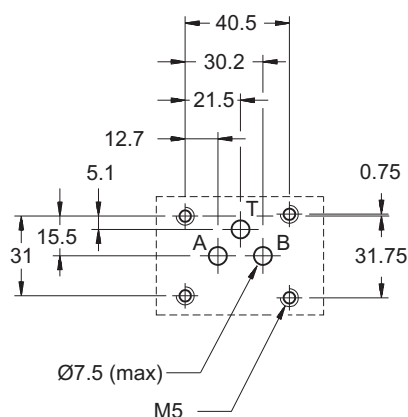
SUBPLATE MOUNTING ISO 6263-03

p max **250** bar

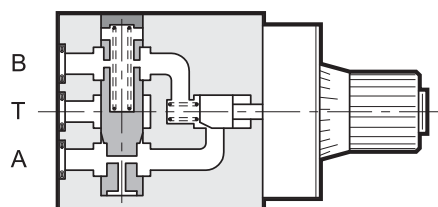
Q max (see table of performances)

MOUNTING INTERFACE

ISO 6263-03-03-*97
(CETOP 4.5.2-3-03-250)



OPERATING PRINCIPLE

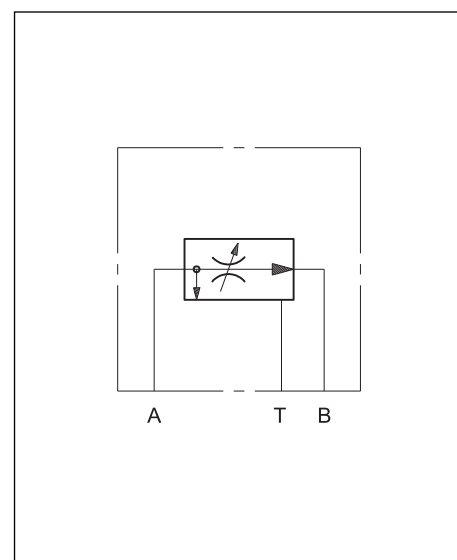


- The pressure and temperature compensated three-way flow control valves serve to control the flow sent to the actuator and to discharge it, which exceeds that required, back to tank at system pressure rather than at relief value pressure.
- The flow rate adjustment range is carried out with three turns of the knob and an indicator shows the number of turns made. A one-turn adjustment on the knob, RPC1*/M, is available upon request.
- The adjustment knob can be locked in any position in the adjustment range by a screw.

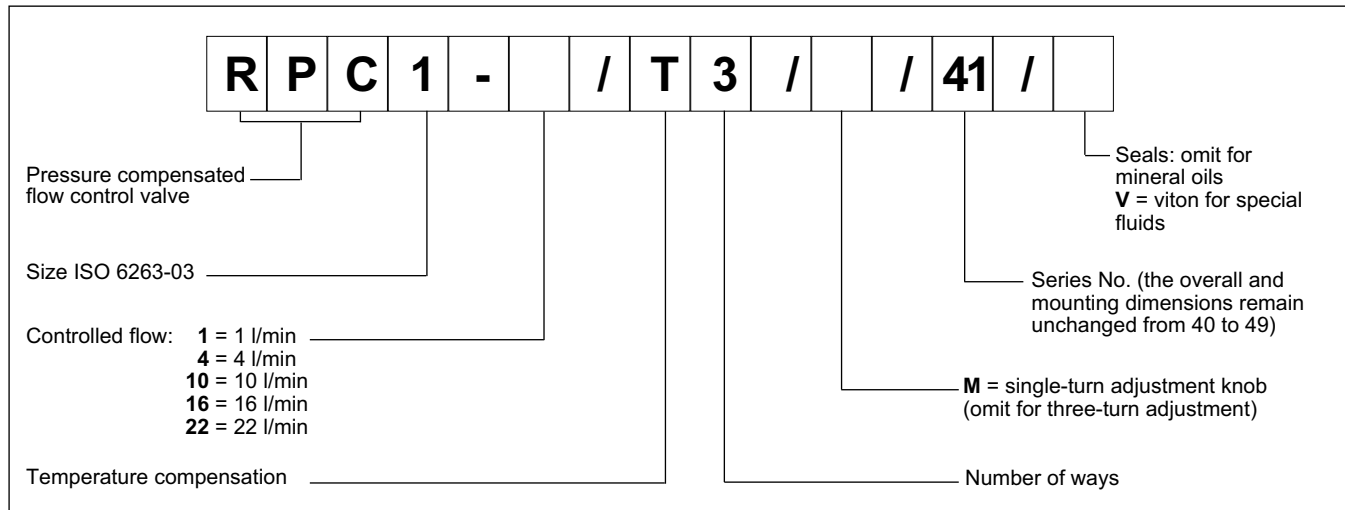
PERFORMANCES (obtained with mineral oil with viscosity of 36 cSt at 50°C)

Maximum operating pressure	bar	250
Minimum pressure difference between A and B		12
Maximum controlled flow rates	l/min	1 - 4 - 10 - 16 - 22
Minimum controlled flow rate (for 1 and 4 l/min)		0,035
Ambient temperature range	°C	-20 / +60
Fluid temperature range	°C	-20 / +80
Fluid viscosity range	cSt	10 ÷ 400
Fluid contamination degree	According to ISO 4406:1999 class 20/18/15	
Fluid contamination degree for flows < 0,5 l/min	According to ISO 4406:1999 class 18/16/13	
Recommended viscosity	cSt	25
Mass	kg	1,5
Number of adjustment knob turns	RPC1-*/T3	3
	RPC1-*/T3/M	1

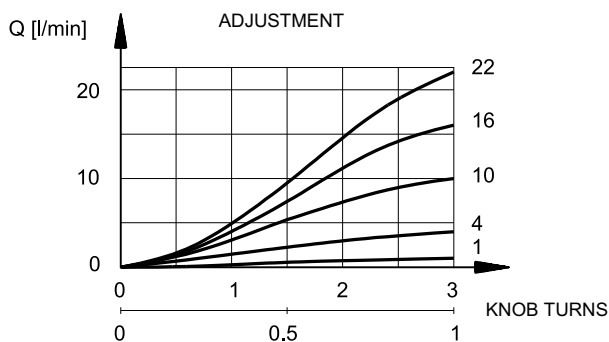
HYDRAULIC SYMBOL



1 - IDENTIFICATION CODE



2 - CHARACTERISTIC CURVES (values obtained with viscosity of 36 cSt at 50°C)



3 - HYDRAULIC FLUIDS

Use mineral oil-based hydraulic fluids HL or HM type, according to ISO 6743-4. For these fluids, use NBR seals. For fluids HFDR type (phosphate esters) use FPM seals (code V). For the use of other kinds of fluid such as HFA, HFB, HFC, please consult our technical department. Using fluids at temperatures higher than 80 °C causes a faster degradation of the fluid and of the seals characteristics.

The fluid must be preserved in its physical and chemical characteristics.

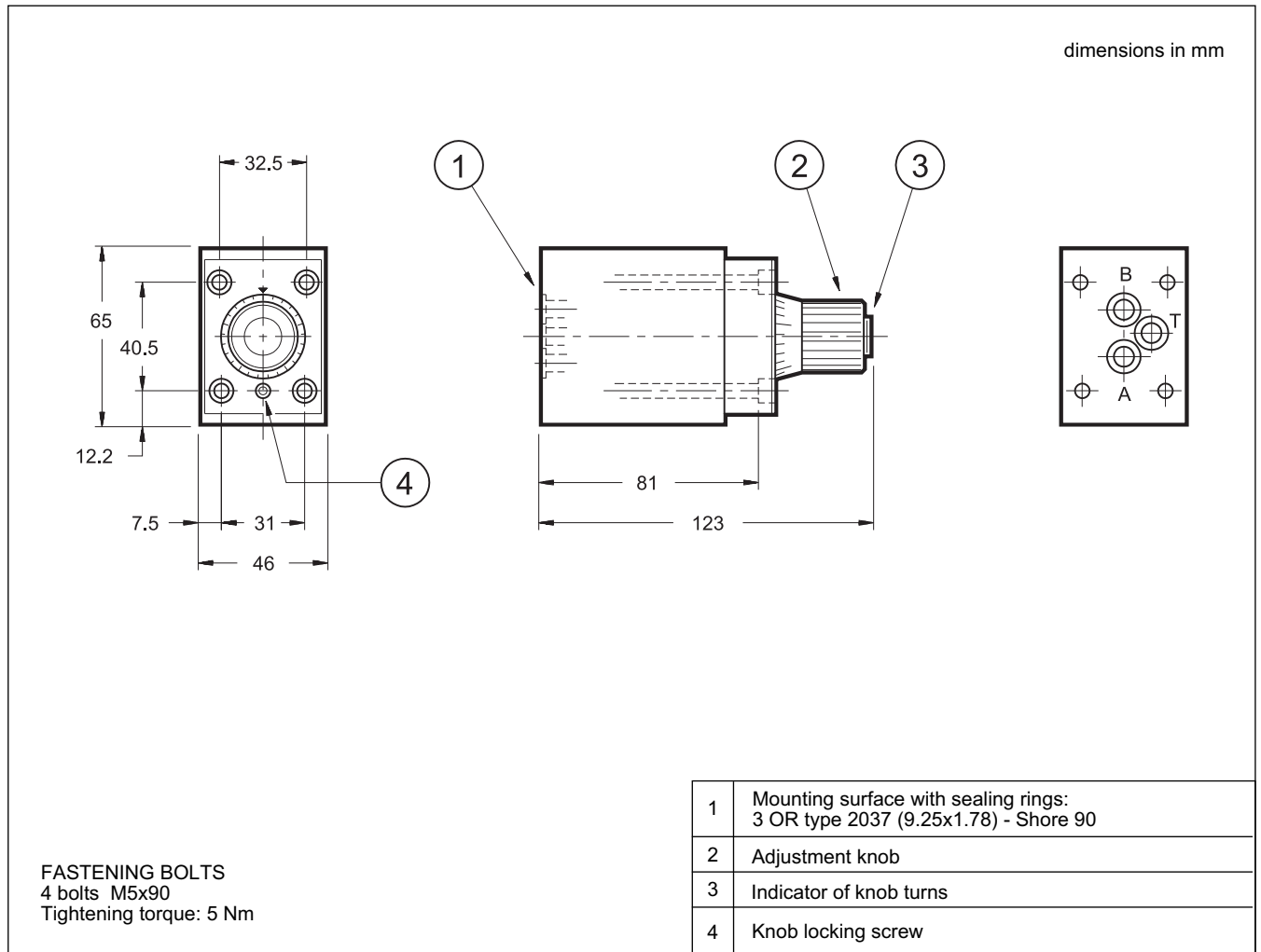
4 - PRESSURE COMPENSATION

Two throttles in series are in the valve. The first is an opening regulated by the knob; the second, piloted by the pressure upstream and downstream of the first throttle, assures a constant pressure drop across the adjustable throttle. In these conditions, the set flow rate value stays constant within a tolerance range of $\pm 2\%$ of the maximum flow controlled by the valve for maximum pressure variation between the intake and outlet chambers of the valve.

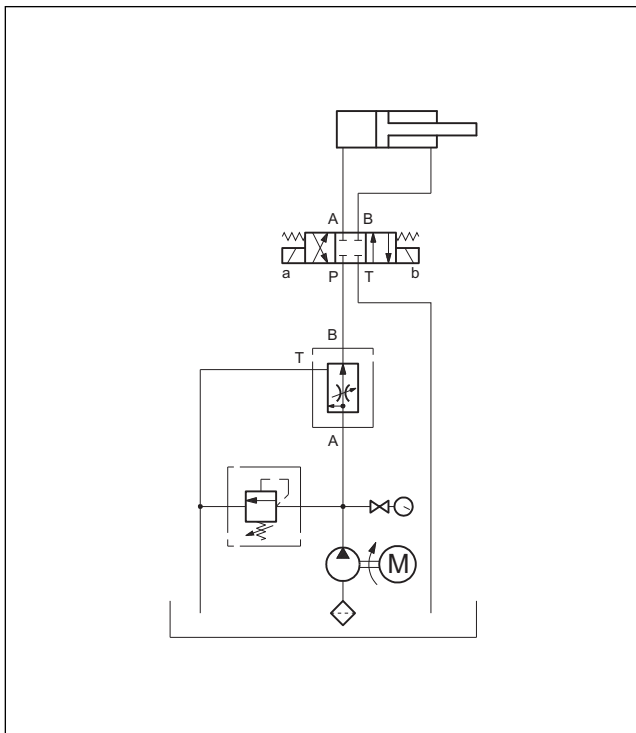
5 - TEMPERATURE COMPENSATION

The valve temperature compensation is obtained with the principle of fluid passage across a thin wall orifice in which the flow rate is not substantially influenced by the oil viscosity fluctuations. For controlled flows of less than 0,5 l/min and with a temperature difference of 50 °C, flow is increased by about 13% of the set flow value. For higher flow rates, and with the same temperature difference, the flow increase is about 4% of the maximum flow controlled by the valve.

6 - OVERALL AND MOUNTING DIMENSIONS



7 - APPLICATION EXAMPLE



8 - SUBPLATES (see catalogue 51 000)

Type	PMMD-AI3G with rear ports with user P plugged
Type	PMMD-AL3G with side ports with user P plugged
Port dimension	3/8" BSP



RPC1-T3

SERIES 41



DIPLOMATIC MS S.p.A.

via M. Re Depaulini 24 ▪ 20015 PARABIAGO (MI) ▪ ITALY
tel. +39 0331.895.111 ▪ www.diplomatic.com ▪ e-mail: sales.exp@diplomatic.com



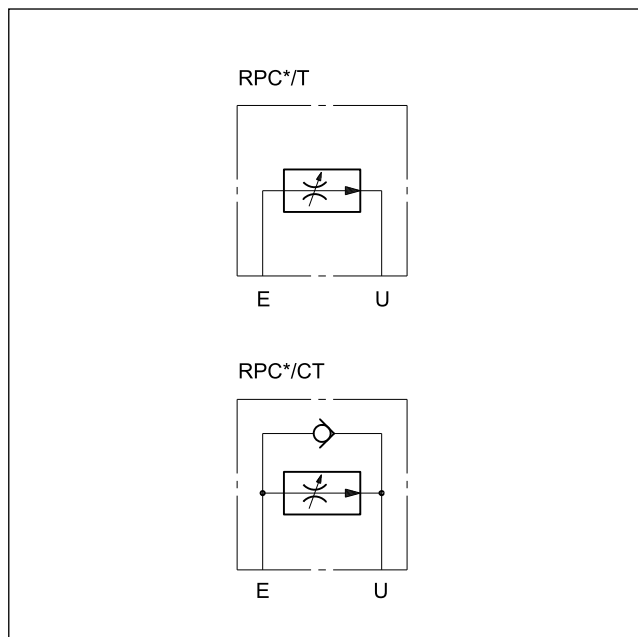
RPC*

PRESSURE AND TEMPERATURE COMPENSATED FLOW CONTROL VALVES

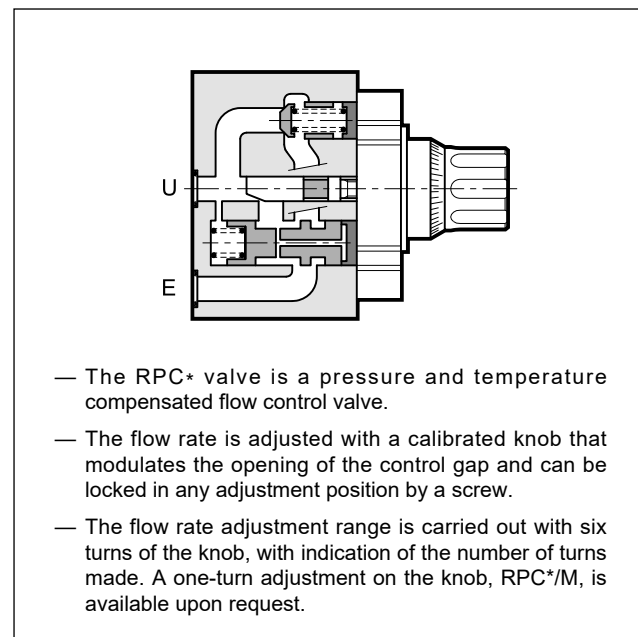
SUBPLATE MOUNTING

RPC2 ISO 6263-06
RPC3 ISO 6263-07

HYDRAULIC SYMBOL



OPERATING PRINCIPLE



PERFORMANCES

(obtained with mineral oil with viscosity of 36 cSt at 50°C)

		RPC2	RPC3
Maximum operating pressure	bar	320	250
Check valve cracking pressure		0,5	0,5
Minimum pressure difference between E and U		10	12
Maximum controlled flow rates	l/min	22 - 38 -70	100 - 150
Minimum controlled flow rate		0,050	0,120
Ambient temperature range	°C	-20 / +60	
Fluid temperature range	°C	-20 / +80	
Fluid viscosity range	cSt	10 ÷ 400	
Fluid contamination degree		According to ISO 4406:1999 class 20/18/15	
Recommended viscosity	cSt	25	
Mass	kg	3,6	7,8

1 - IDENTIFICATION CODE

R	P	C		-		T	/		/		/		/	
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Pressure compensated flow control valve

Size: _____
2 = ISO 6263-06
3 = ISO 6263-07

C = incorporated check valve (Omit if not required)

Temperature compensation _____

Controlled flow: Size 2 Size 3
N = 22 l/min **100** l/min
S = 38 l/min **150** l/min
70 = 70 l/min

Seals: omit for mineral oils
V = viton for special fluids

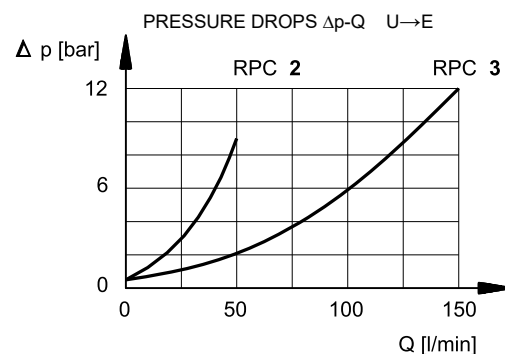
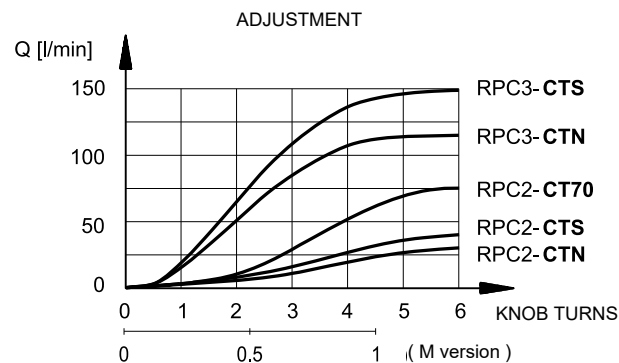
Series No.
31 for RPC*2
44 for RPC*3
 (the overall and mounting dimensions remain unchanged from 30 to 39 and from 40 to 49)

M = single-turn adjustment knob (omit for six-turn adjustment)

RC = compensating stroke governor (Omit if not required)

2 - CHARACTERISTIC CURVES

(values obtained with viscosity of 36 cSt at 50°C)



3 - HYDRAULIC FLUIDS

Use mineral oil-based hydraulic fluids HL or HM type, according to ISO 6743-4. For these fluids, use NBR seals. For fluids HFDR type (phosphate esters) use FPM seals (code V).

For the use of other kinds of fluid such as HFA, HFB, HFC, please consult our technical department. Using fluids at temperatures higher than 80 °C causes a faster degradation of the fluid and of the seals characteristics.

The fluid must be preserved in its physical and chemical characteristics.

4 - PRESSURE COMPENSATION

Two throttles in series are in the valve. The first is an opening regulated by the knob; the second, piloted by the pressure upstream and downstream of the first throttle, assures a constant pressure drop across the adjustable throttle.

In these conditions, the set flow rate value stays constant within a tolerance range of $\pm 3\%$ of the maximum flow controlled by the valve for the maximum pressure variation between inlet and outlet chambers of the valve.

5 - TEMPERATURE COMPENSATION

A device located on the first throttle which is sensitive to the temperature fluctuations corrects the position keeping the controlled flow more or less unaltered even should the oil viscosity change.

The fluctuation of the set flow rate stays within $\pm 2,5\%$ of the maximum flow controlled by the valve.

6 - REVERSE FREE FLOW

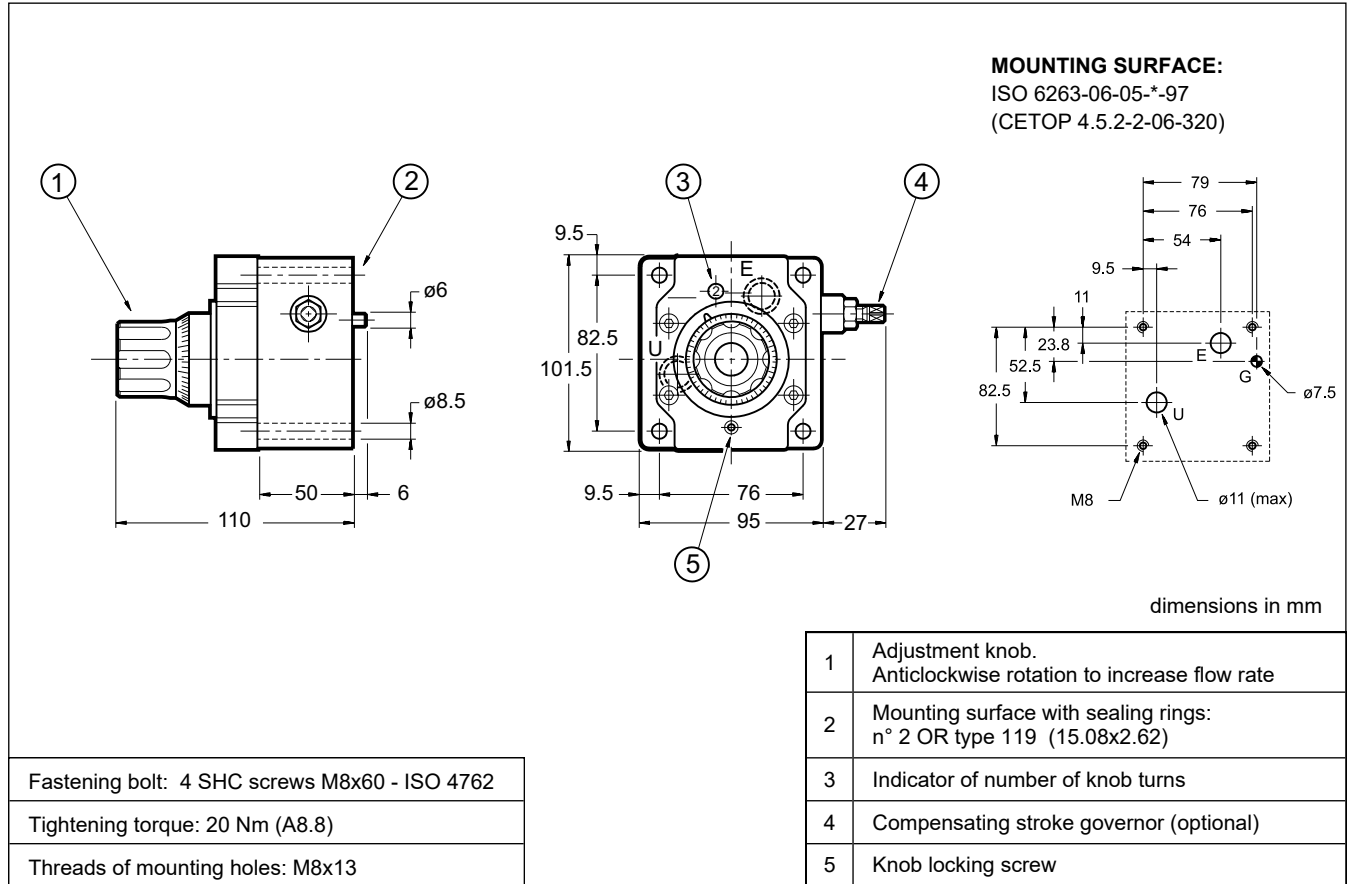
The RPC* valves, upon request, are supplied with an incorporated check valve to allow free flow in the direction opposite of the controlled flow. In this case the valve code becomes RPC*-CT.

7 - COMPENSATING STROKE GOVERNOR

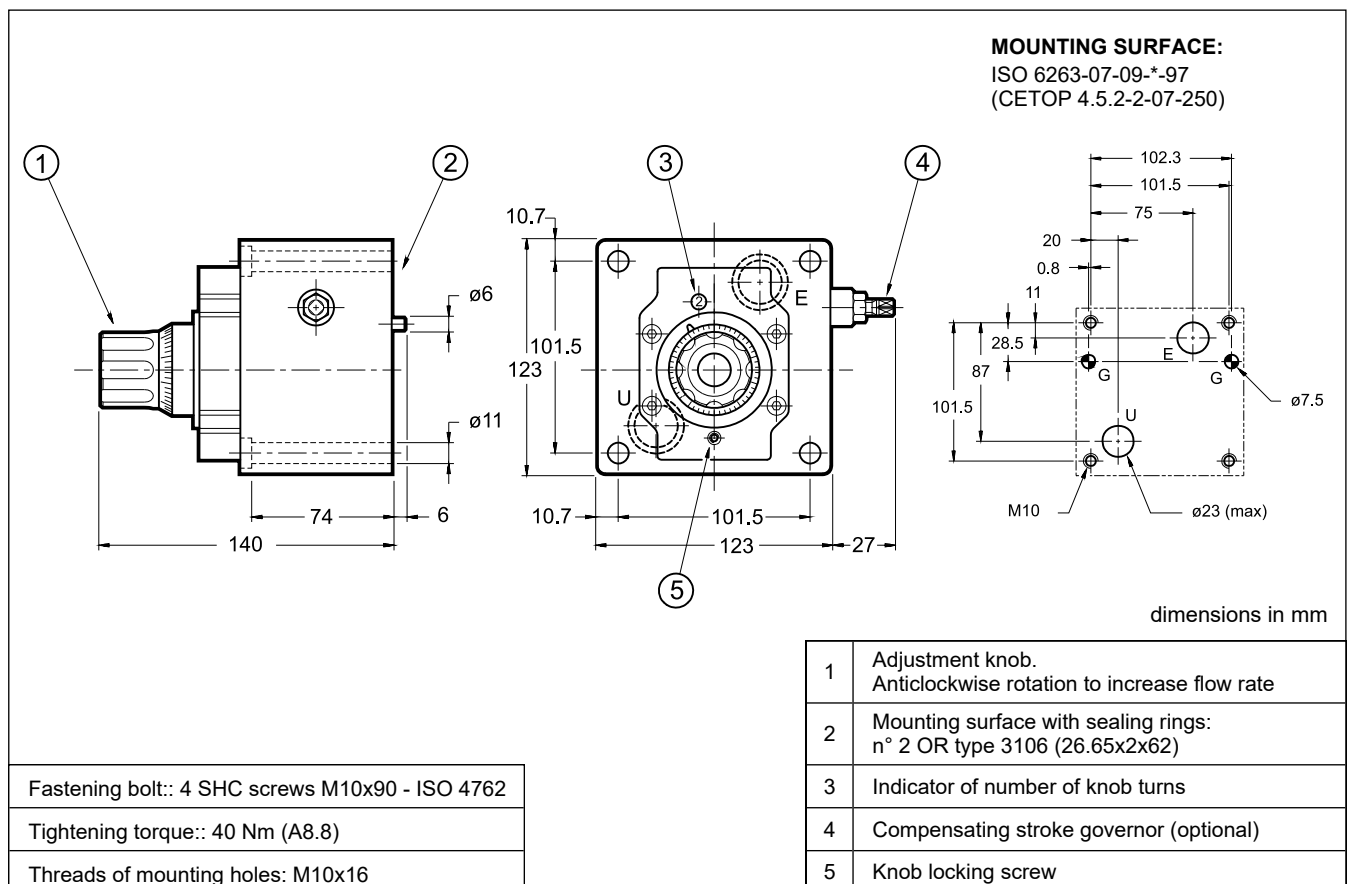
In order to avoid jumps in the actuator when it is started, the RPC valve can be equipped with a special accessory that controls the compensating stroke, thus preventing it from making uncontrolled movements.

Add the suffix **RC** to the identification code to request this governor. See paragraph 1.

8 - RPC2 OVERALL AND MOUNTING DIMENSIONS



9 - RPC3 OVERALL AND MOUNTING DIMENSIONS





10 - SUBPLATES

(see catalogue 51 000)

	RPC2	RPC3
Type	PMRPC2-AI4G rear ports	PMRPC3-AI6G rear ports
Port dimensions	1/2" BSP	1" BSP



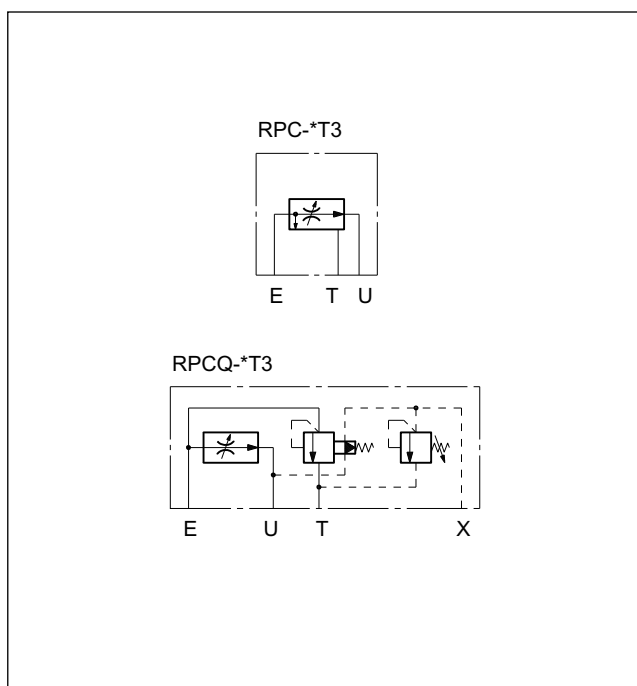
RPC*-T3

PRESSURE AND TEMPERATURE COMPENSATED THREE-WAY FLOW CONTROL VALVES

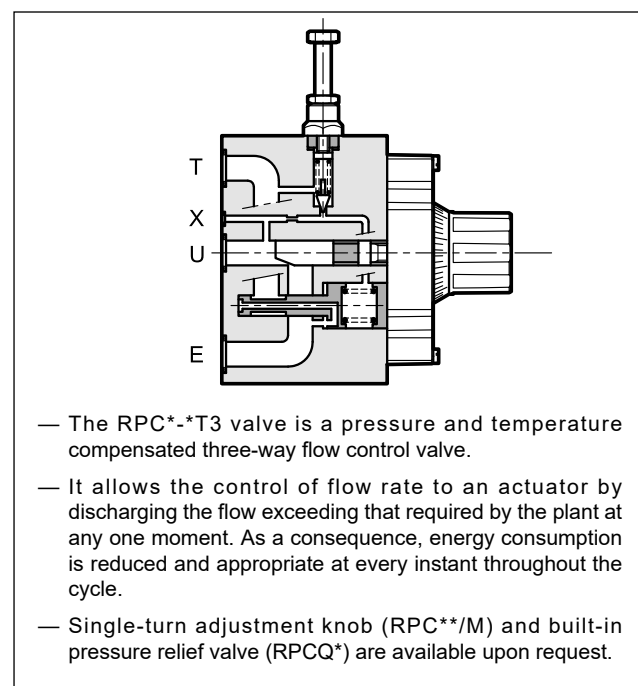
SUBPLATE MOUNTING

RPC-2T3 ISO 6263-06
RPC-3T3 ISO 6263-07

HYDRAULIC SYMBOLS



OPERATING PRINCIPLE



PERFORMANCE RATINGS

(obtained with mineral oil with viscosity of 36 cSt at 50°C)

		RPC*-2T3	RPC*-3T3
Maximum operating pressure	bar	320	250
Minimum pressure difference between E and U		10	12
Maximum controlled flow rate	l/min	50	150
Minimum controlled flow rate		0,060	0,130
Ambient temperature range	°C	-20 / +60	
Fluid temperature range	°C	-20 / +80	
Fluid viscosity range	cSt	10 ÷ 400	
Fluid contamination degree		According to ISO 4406:1999 class 20/18/15	
Fluid contamination degree for flow rate <0,5 l/min		According to ISO 4406:1999 class 18/16/13	
Recommended viscosity	cSt	25	
Mass	kg	4,7	9

1 - IDENTIFICATION CODE

R	P	C		-		T	3	/		/		/	
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Pressure compensated flow control valve

Q = with pressure relief valve adjustment range: 10 ÷ 210 bar (omit if not required)

Size: _____
2 = ISO 6263-06
3 = ISO 6263-07

Temperature compensation _____

Number of ways _____

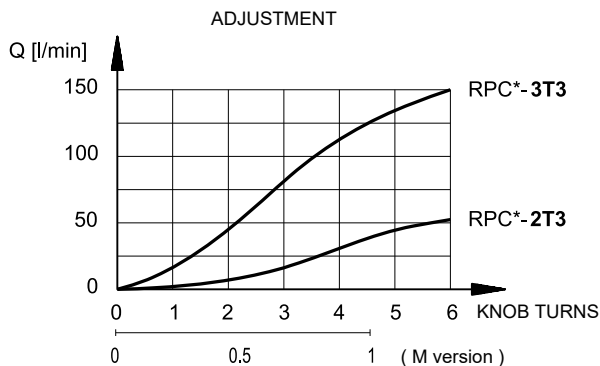
Seals: omit for mineral oils
V = viton for special fluids

Series No. **31** for RPC* - 2T3
43 for RPC* - 3T3
 (the overall and mounting dimensions remain unchanged from 30 to 39 and from 40 to 49)

M = single-turn adjustment knob (omit for six-turn adjustment)

2 - CHARACTERISTIC CURVES

(values obtained with viscosity of 36 cSt at 50°C)



3 - HYDRAULIC FLUIDS

Use mineral oil-based hydraulic fluids HL or HM type, according to ISO 6743-4. For these fluids, use NBR seals. For fluids HFDR type (phosphate esters) use FPM seals (code V). For the use of other kinds of fluid such as HFA, HFB, HFC, please consult our technical department.

Using fluids at temperatures higher than 80 °C causes a faster degradation of the fluid and of the seals characteristics.

The fluid must be preserved in its physical and chemical characteristics.

4 - PRESSURE COMPENSATION

Two throttles in series are in the valve. The first is an opening regulated by the knob; the second, piloted by the pressure upstream and downstream of the first throttle, assures a constant pressure drop across the adjustable throttle. In these conditions, the set flow rate value stays constant within a tolerance range of $\pm 3\%$ of the maximum flow controlled by the valve for maximum pressure variation between the intake and outlet chambers of the valve.

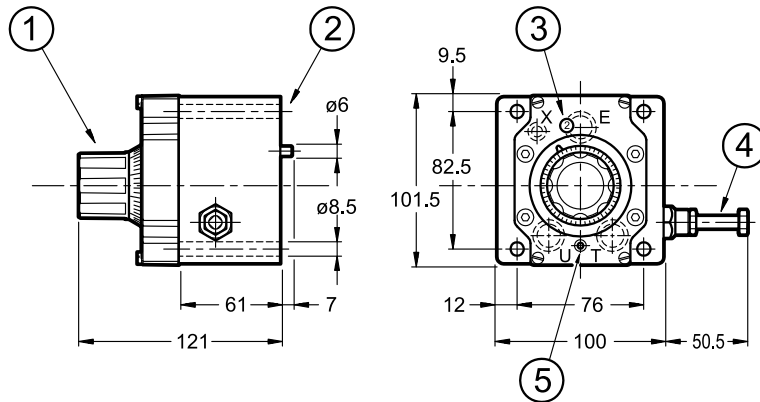
5 - TEMPERATURE COMPENSATION

A device located on the first throttle which is sensitive to the temperature fluctuations corrects the position keeping the controlled flow more or less unaltered even should the oil viscosity change.

The fluctuation of the set flow rate stays within $\pm 2,5\%$ of the maximum flow controlled by the valve.

6 - RPC*-2T3 SERIES 31 OVERALL AND MOUNTING DIMENSIONS

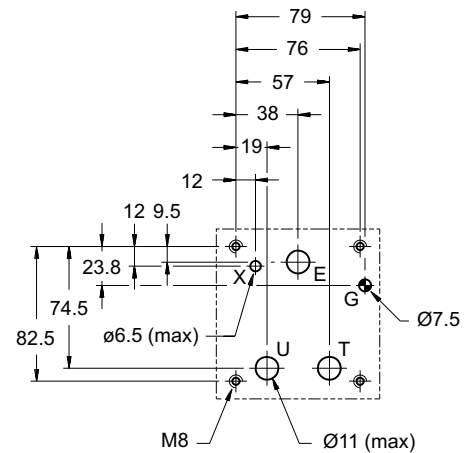
dimensions in mm



1	Adjustment knob with setting range in 6 turns. Anticlockwise rotation to increase flow rate
2	Mounting surface with sealing rings: N. 3 OR type 3068 (17.13x2.62) N. 1 OR type 109 (9.13x2.62)
3	Indicator of number of knob turns
4	Pressure adjustment screw RPCQ
5	Knob locking screw

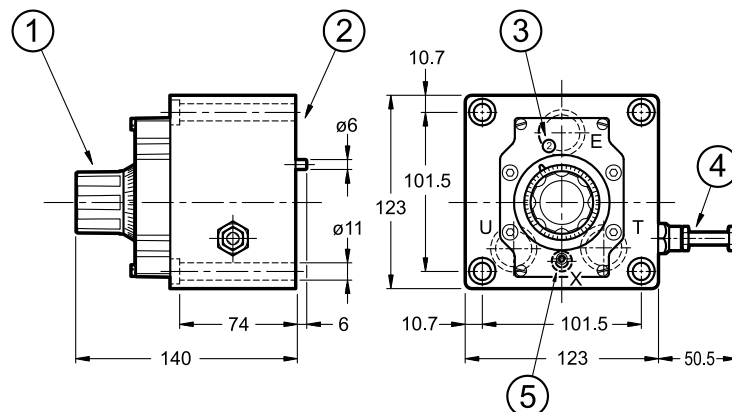
FASTENING BOLTS: 4 SHC bolts ISO 4762 M8x75
Tightening torque: 20 Nm

MOUNTING SURFACE:
ISO 6263-06-07-* 97
(CETOP 4.5.2-3-06-320)



7 - RPC*-3T3 SERIES 43 OVERALL AND MOUNTING DIMENSIONS

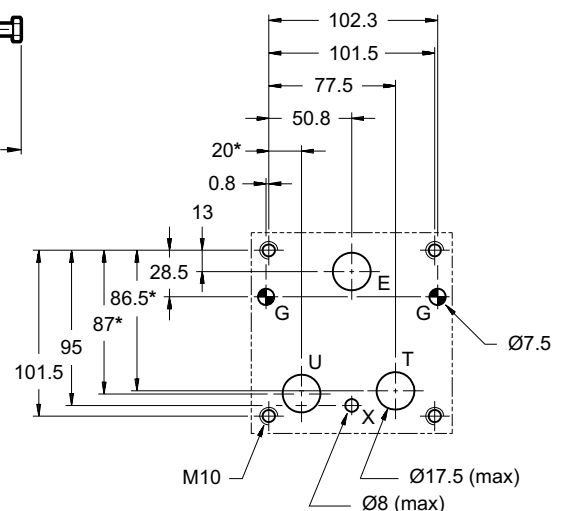
dimensions in mm



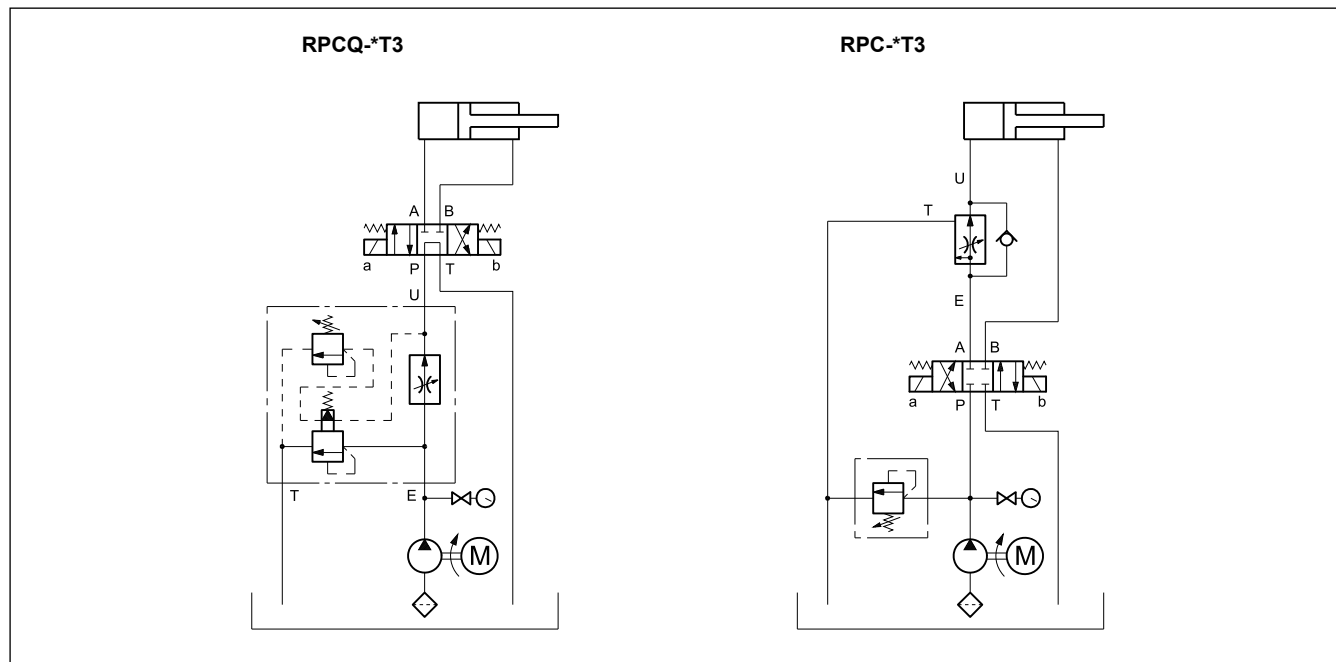
1	Adjustment knob with setting range in 6 turns. Anticlockwise rotation to increase flow rate
2	Mounting surface with sealing rings: N. 3 OR type 3106 (26.65x2.62) N. 1 OR type 3043 (10.78x2.62)
3	Indicator of number of knob turns
4	Pressure adjustment screw RPCQ
5	Knob locking screw

FASTENING BOLTS: 4 SHC bolts ISO 4762 M10x90
Tightening torque: 40 Nm

MOUNTING SURFACE:
ISO 6263-07-11-* 97
(CETOP 4.5.2-3-07-250)



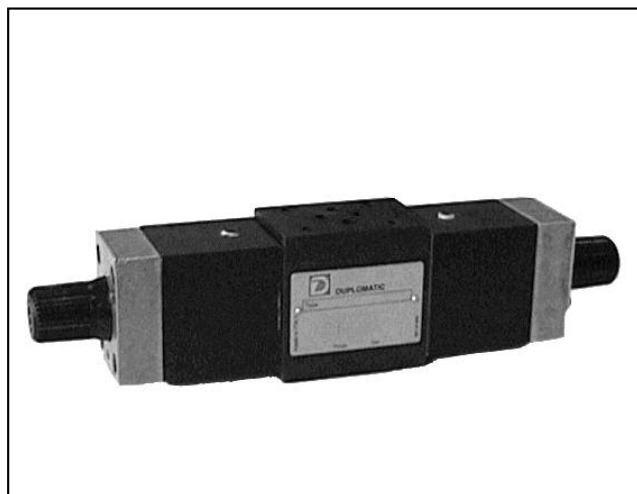
11 - APPLICATION EXAMPLES



12 - SUBPLATES

(see catalogue 51 000)

	RPC* - 2T3	RPC* - 3T3
Type	PMRPCQ2-AI4G rear ports	PMRPCQ3-AI6G rear ports
E, U, T port dimensions	1/2" BSP	1" BSP
X port dimensions	1/4" BSP	1/4" BSP



RPC1*/M

FLOW CONTROL VALVE

SERIES 10

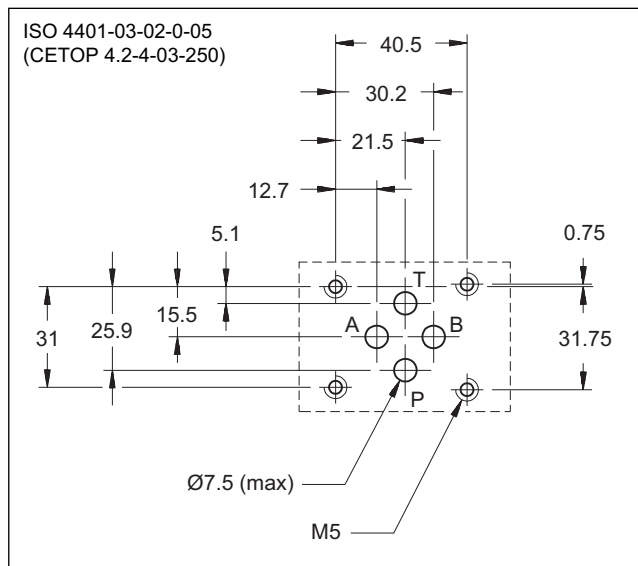
MODULAR VERSION

ISO 4401-03

p max **250** bar

Q max (see table of performances)

MOUNTING INTERFACE



CONFIGURATIONS

(see hydraulic symbols table and identification code - par. 1)

PERFORMANCES (measured with mineral oil of viscosity 36cSt at 50°C)

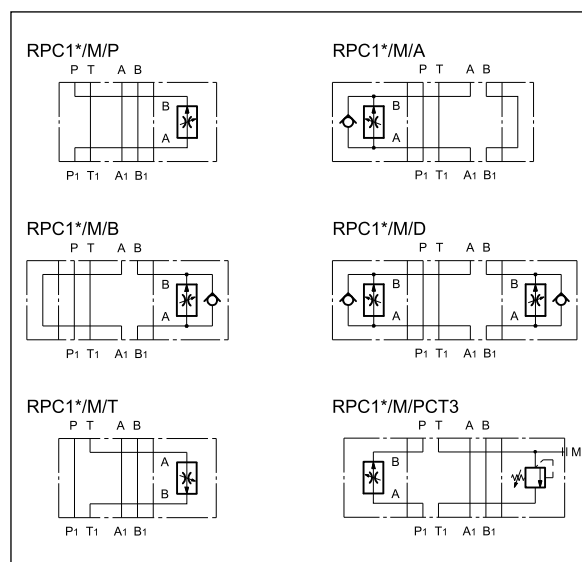
Maximum operating pressure	bar	250
Maximum flow rate in controlled lines	l/min	1-4-10-16-22-30
Maximum flow rate in the free lines		65
Reverse free flow maximum flowrate		40
Ambient temperature range	°C	-20 / +60
Fluid temperature range	°C	-20 / +80
Fluid viscosity range	cSt	10 ÷ 400
Fluid contamination degree	According to ISO 4406:1999 class 20/18/15	
Recommended viscosity	cSt	25
Mass:	kg	3
RPC1-*/M/ A-B-T-P		4,1
RPC1-*/M/ D		3,7
RPC1-*/M/PCT3		
only modular block ISO 4401-03		
without flow control valves:		
RPC1-K/M/*		1,5
RPC1-K/M/PCT3		2,4

NOTE: for detailed information regarding the RPC1 flow control valve, see catalogue 32 200

OPERATING PRINCIPLE

- The RPC1*/M valve is a flow control valve with pressure and temperature compensation, made as a modular version with mounting surface according to the ISO 4401 standards.
- It can be assembled quickly under the ISO 4401-03 directional solenoid valves and allows easy execution of hydraulic circuits where control of the speed of the actuators is required.
- It is available in six flow adjustment ranges up to 30 l/min.
- Combined with MDS3 type solenoid operated directional control valves (see cat. 41 251), it's possible to obtain circuits for the fast/slow control of the work actuators.

HYDRAULIC SYMBOLS





RPC1*/M

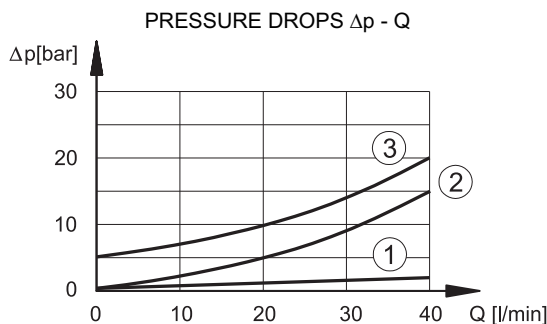
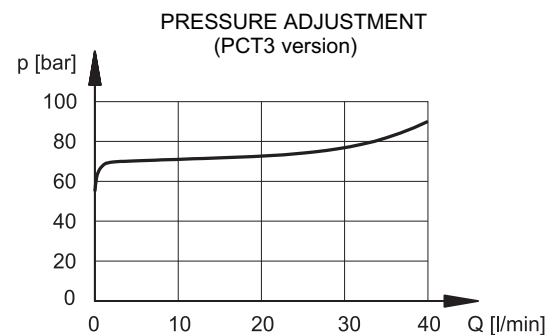
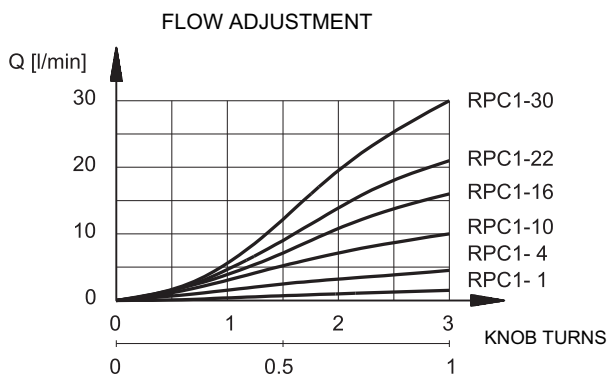
SERIES 10

1 - IDENTIFICATION CODE

R	P	C	1	-		/	M	/		-		/	10	/	
Pressure and temperature compensated flow control valve						Seals: omit for mineral oils V = viton for special fluids						Series No. (the overall and mounting dimensions remain unchanged from 10 to 19)			
Flow adjustment range: 1 = 1 l/min 16 = 16 l/min 4 = 4 l/min 22 = 22 l/min 10 = 10 l/min 30 = 30 l/min K = only ISO 4401-03 modular block supplied without flow control valve						M1 = adjustment knob only for PCT3 version (omit for adjustment with countersunk hex screw)						Configurations: P = meter in control on line P A = control from chamber A of the actuator B = control from chamber B of the actuator D = control from chambers A and B of the actuator T = meter out control on line T PCT3 = meter in control on line P with backpressure adjustable on line T up to 70 bar (A and B configurations are not available in K version)			
Modular version size ISO 4401-03															

2 - CHARACTERISTIC CURVES

(values obtained with viscosity of 36 cSt at 50°C)



- 1) pressure drops on free lines
- 2) pressure drops through check valve
- 3) pressure drops through the backpressure valve (PCT3 version)

3 - HYDRAULIC FLUIDS

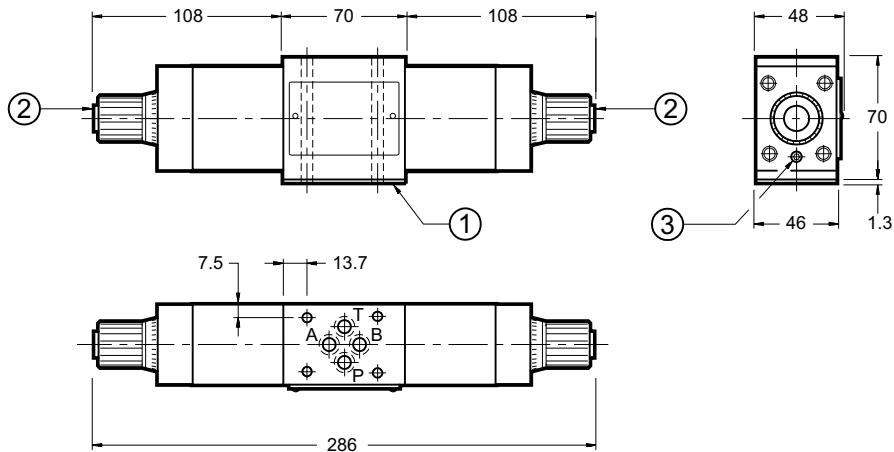
Use mineral oil-based hydraulic fluids HL or HM type, according to ISO 6743-4. For these fluids, use NBR seals. For fluids HFDR type (phosphate esters) use FPM seals (code V). For the use of other kinds of fluid such as HFA, HFB, HFC, please consult our technical department.

Using fluids at temperatures higher than 80 °C causes a faster degradation of the fluid and of the seals characteristics. The fluid must be preserved in its physical and chemical characteristics.

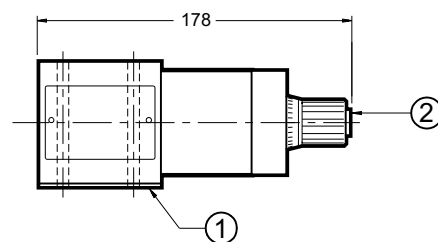
4 - OVERALL AND MOUNTING DIMENSIONS RPC1*/M VALVES

dimensions in mm

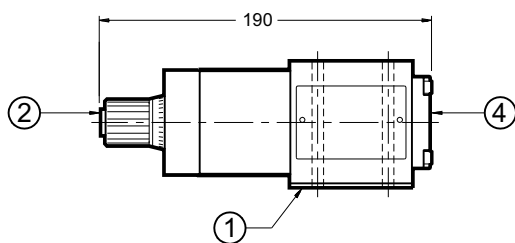
RPC1*/M/D



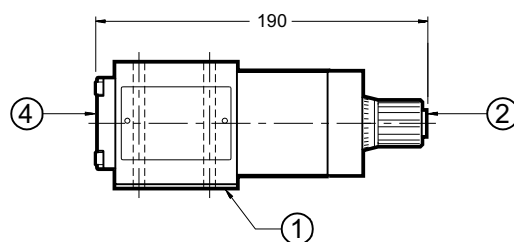
RPC1*/M/P
RPC1*/M/T



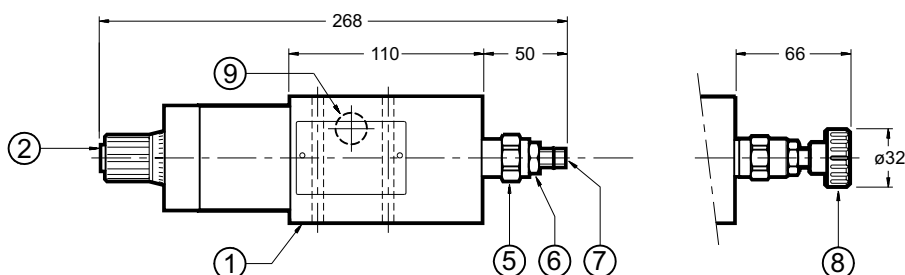
RPC1*/M/A



RPC1*/M/B



RPC1*/M/PCT3

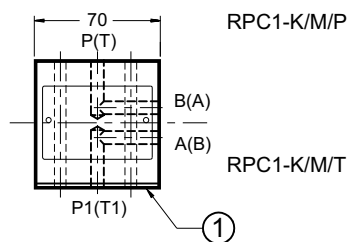
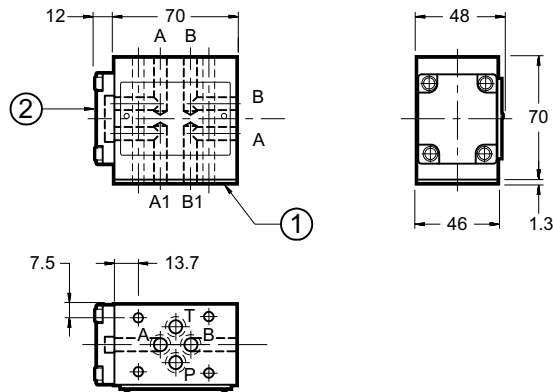


1	Mounting plate with sealing rings: P-OR1L/20N (NBR seals) P-OR1L/20V (Viton seals) For RPC1*/M/PCT3 without mounting plate: 4 OR 2037 (9.25x1.78) - 90 Shore
2	Flow adjustment knob (3 turns total) Rotate anticlockwise to increase flow.
3	Knob locking screw
4	Cross-connection cover
5	Backpressure valve on line T. Pressure adjustment range up to 70 bar
6	Locking nut: spanner 17
7	Countersunk hex screw: spanner 5 Rotate clockwise to increase pressure
8	Adjustment knob: M1
9	Pressure gauge port 1/4" BSP

5 - OVERALL AND MOUNTING DIMENSIONS OF BLOCKS WITHOUT FLOW CONTROL VALVE

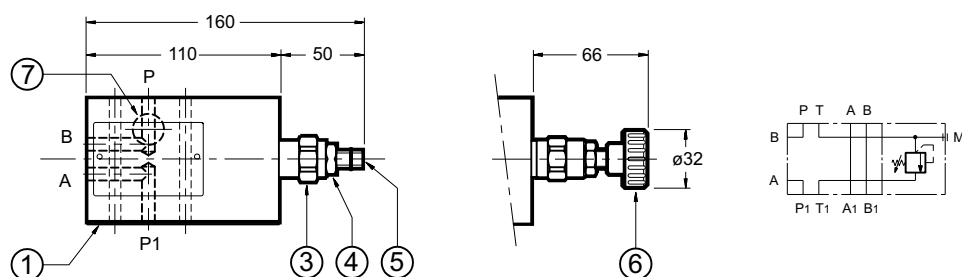
dimensions in mm

RPC1-K/M/D



1	Mounting plate with sealing rings: P-OR1L/20N (NBR seals) P-OR1L/20V (Viton seals) For RPC1-*/M/PCT3 without mounting plate: 4 OR 2037 (9.25x1.78) - 90 Shore
2	Cross-connection cover
3	Backpressure valve on line T. Pressure adjustment range up to 70 bar
4	Locking nut: spanner 17
5	Countersunk hex screw: spanner 5 Rotate clockwise to increase pressure
6	Adjustment knob: M1
7	Pressure gauge port 1/4" BSP

RPC1-K/M/PCT3



RLM3

ELECTRIC FAST / SLOW SPEED SELECTION VALVE SERIES 21

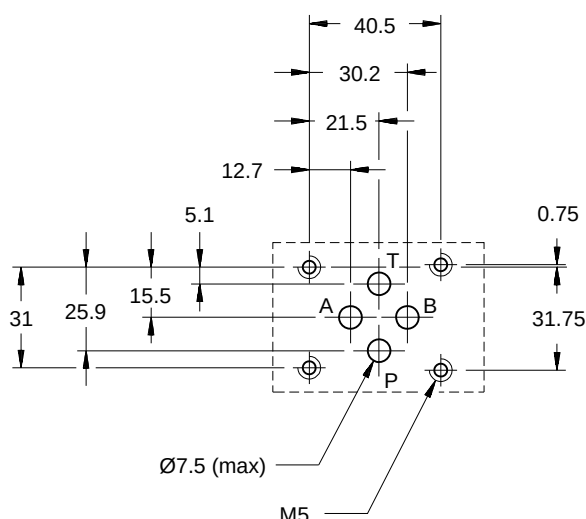


MODULAR VERSION ISO 4401-03

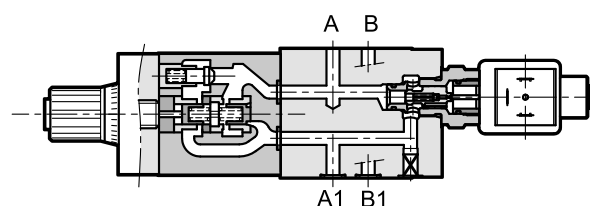
p max **250** bar
Q max (see table of performances)

MOUNTING SURFACE

ISO 4401-03 -02-0-05
(CETOP 4.2-4-03-250)



OPERATING PRINCIPLE



- RLM3* valves are modular valves for fast / slow speed control of hydraulic actuators. The mounting surface is according to ISO 4401-03 standards.
- The slow speed regulation is done by a compensated flow control valve (RPC1, catalogue 32 200). Six adjustment ranges are available.
- The fast/slow speed selection is done by a solenoid poppet valve KT08 (see catalogue 43 105).
- RLM3* valves can be easily stacked under ISO 4401-03 directional solenoid valves with no need of pipes, allowing the construction of directional and speed controls for actuators in a single station.

PERFORMANCES

(measured with mineral oil of viscosity 36 cSt at 50 °C)

Maximum operating pressure	bar	250
Maximum flow rate in controlled lines	l/min	1 - 4 - 10 - 16 - 22 - 30
Maximum flow rate in the free lines		65
Minimum controlled flow rate	l/min	0,025
Ambient temperature range	°C	-20 / +50
Fluid temperature range	°C	-20 / +80
Fluid viscosity range	cSt	10 ÷ 400
Fluid contamination degree	According to ISO 4406:1999 class 20/18/15	
Recommended viscosity	cSt	25
Mass	kg	3,1

CONFIGURATIONS

(see hydraulic symbols)

- Type "A": meter-out control on port A (control on outgoing flow from the A chamber of the actuator) .
- Type "T": control on the T path of the directional solenoid valve which will be stacked above the RLM3, to regulate the speed in both the directions.

1 - IDENTIFICATION CODE

R	L	M	3		-			/	21	N	-			
----------	----------	----------	----------	--	----------	--	--	----------	-----------	----------	----------	--	--	--

Electric fast / slow speed selection valve

Modular version

Size ISO 4401-03

Adjustments: _____
A = adjustment on chamber A of the actuator
T = adjustment on discharge T of the directional solenoid valve

C = normally closed solenoid valve
A = normally open solenoid valve

Flow adjustment range: _____
01 = 1 l/min **16** = 16 l/min
04 = 4 l/min **22** = 22 l/min
10 = 10 l/min **30** = 30 l/min

Series No. (the overall and mounting dimensions remain unchanged from 20 to 29)

NBR seals for mineral oils

Manual override (see point 11):
 Omit for valves with no manual override
/CK2 = push and twist

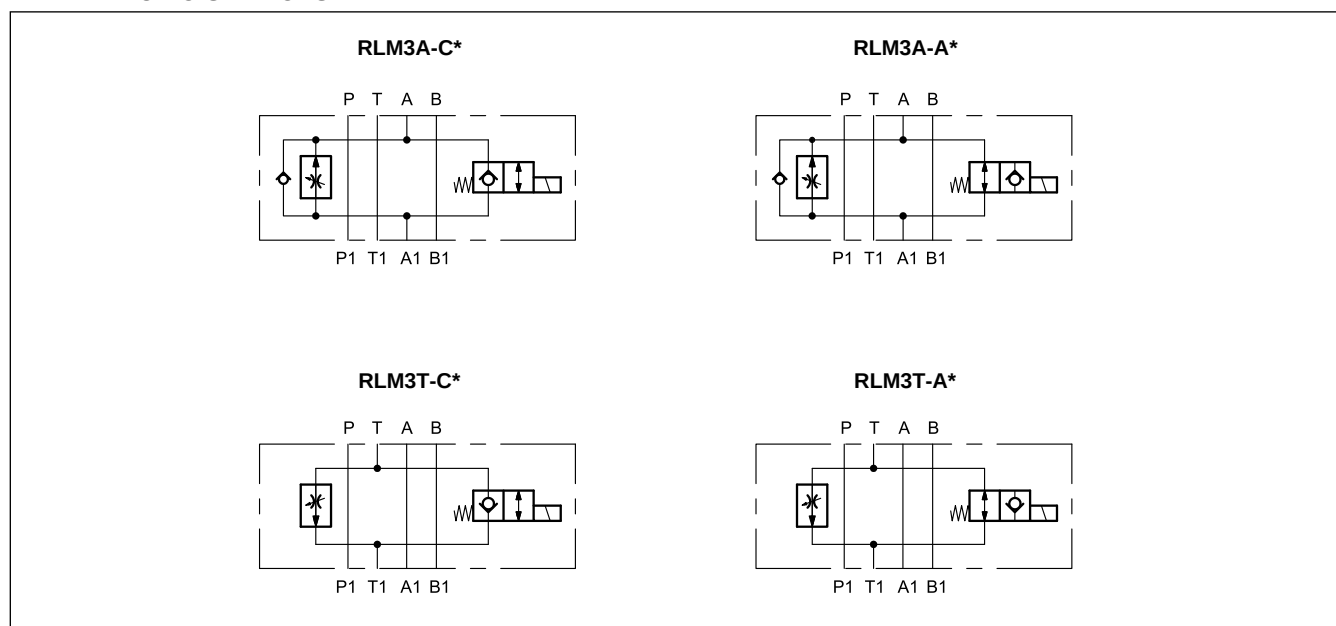
Coil electric connection (see point 8):
K1 = plug for connector type EN 175301-803 (ex DIN 43650) (**standard**)

For **D12** and **D24** coils only:
K2 = plug for connector type AMP JUNIOR
K7 = plug DEUTSCH DT04-2P for male connector type DEUTSCH DT06-2S

DC power supply :
D00 = valve without coil (the coil locking ring and the related OR are supplied)
D12 = 12 V
D24 = 24 V
D110 = 110 V
D220 = 220 V

NOTE: For further information about the compensated flow control valve see catalogue 32 200; for further information about the solenoid switching valve see catalogue 43 105.

2 - HYDRAULIC SYMBOLS



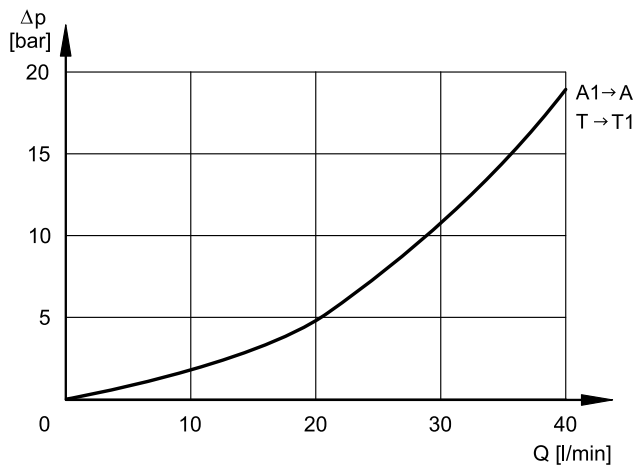
3 - HYDRAULIC FLUIDS

Use mineral oil-based hydraulic fluids HL or HM type, according to ISO 6743-4. For these fluids, use NBR seals (code N). For fluids HFDR type (phosphate esters) use FPM seals (code V). For the use of other kinds of fluid such as HFA, HFB, HFC, please consult our technical department.

Using fluids at temperatures higher than 80 °C causes a faster degradation of the fluid and of the seals characteristics. The fluid must be preserved in its physical and chemical characteristics.

4 - PRESSURE DROPS ΔP -Q

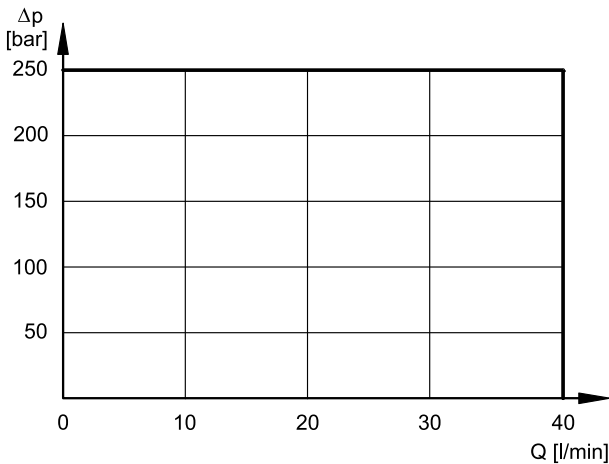
(obtained with viscosity of 36 cSt at 50 °C)



The value in the diagram refer to the fast flow, through the solenoid valve and is the same for both versions A (normally open) and C (normally closed).

5 - OPERATING LIMITS

(obtained with viscosity of 36 cSt at 50 °C and filtration according to ISO 4406:1999 class 18/16/13.)



This curve defines the flow rate operating field according to ISO 6403 standard, with solenoid at rated temperature and voltage equal to 90% of the nominal voltage.

6 - SWITCHING TIME

(obtained with viscosity of 36 cSt at 50 °C)

Values obtained according to the ISO 6403 standard.

TIMES [ms]	ENERGIZING	DE-ENERGIZING
RLM3*-C*	60	85
RLM3*-A*	85	60

7 - ELECTRICAL FEATURES

7.1 - Solenoids

These are essentially made up of two parts: tube and coil. The tube is threaded into the valve body and includes the armature that moves immersed in oil, without wear. The inner part, in contact with the oil in the return line, ensures heat dissipation.

The coil is fastened to the tube by a threaded ring, and can be easily replaced. Coils of different voltages can be fitted without having to replace the tube.

Protection from atmospheric agents IEC 60529

The IP protection degree is guaranteed only with both valve and connectors of an equivalent IP degree, correctly connected and installed.

electric connection	electric connection protection	whole valve protection
K1	IP65	IP65
K2	IP65/67	
K7	IP65/67	

SUPPLY VOLTAGE FLUCTUATION	± 10% Vnom
MAX SWITCH ON FREQUENCY	10.000 ins/hour
DUTY CYCLE	100%
ELECTROMAGNETIC COMPATIBILITY (EMC)	In compliance with 2014/30/UE
LOW VOLTAGE	In compliance with 2014/35/UE
CLASS OF PROTECTION Coil insulation (VDE 0580) Impregnation	class H class F

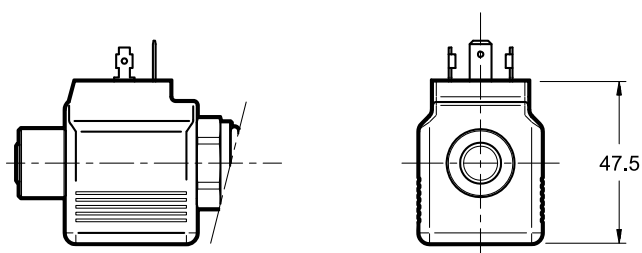
7.2 - Current and absorbed power

The table shows the absorption values relating to the various types of coil for direct current power supply.

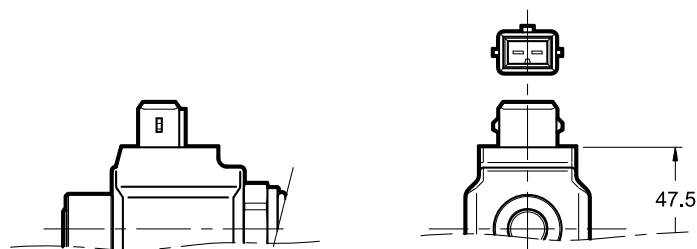
	Nominal voltage [V] (±10%)	Resistance at 20°C [Ω] (±7%)	Absorbed current [A]	Absorbed power [W]	Coil code		
					K1	K2	K7
D12	12	6.5	1.84	22	1904140	1904180	1904150
D24	24	26.2	0.92	22	1904141	1904181	1904151
D110	110	550	0.2	22	1904142	-	-
D220	220	2200	0.1	22	1904143	-	-

8 - ELECTRIC CONNECTIONS

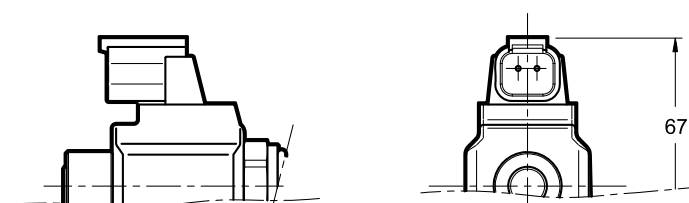
connection for EN 175301-803
(ex DIN 43650) connector
code **K1 (standard)**



connection for AMP JUNIOR
connector type
code **K2**



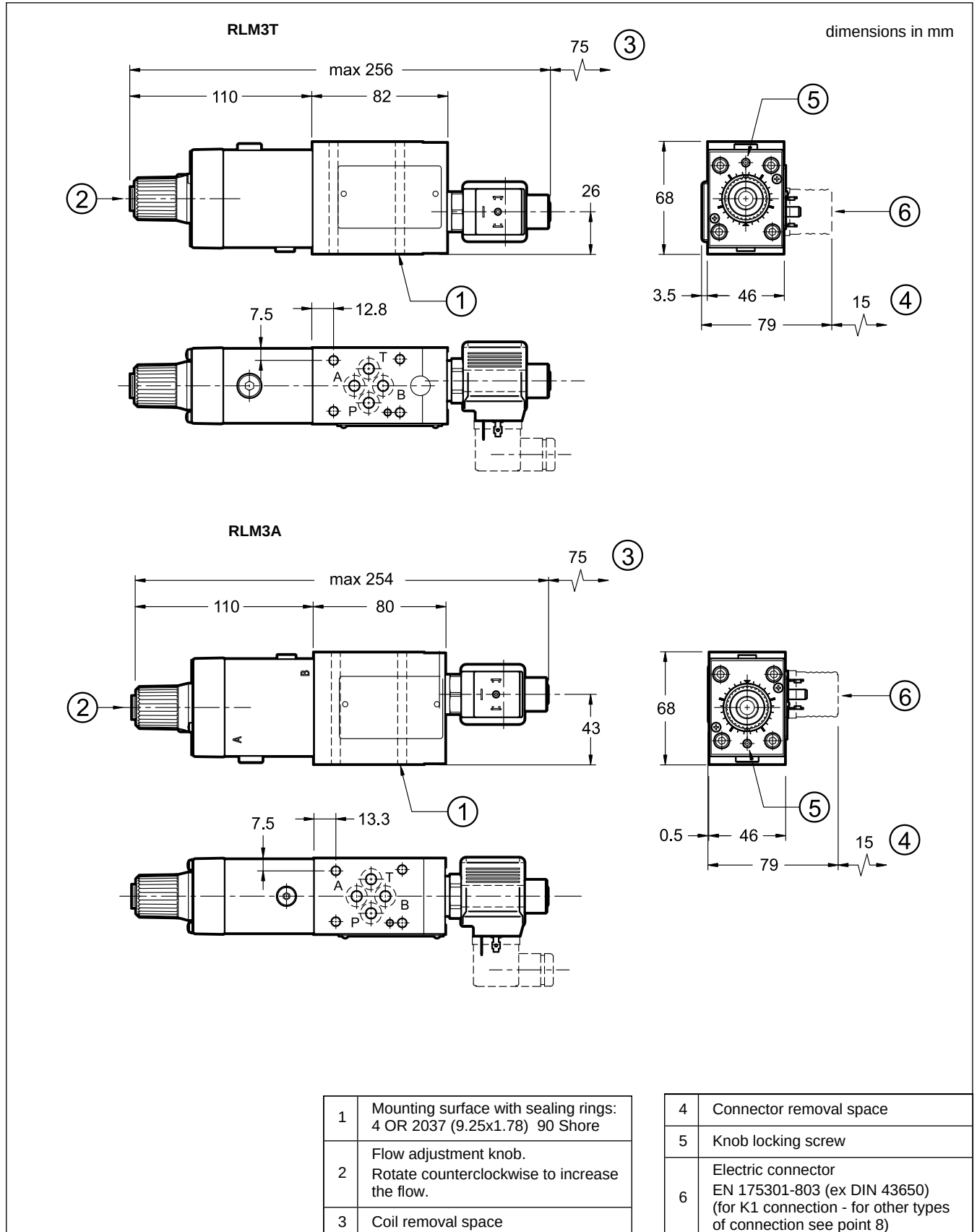
connection for
DEUTSCH DT06-2S male
connector type
code **K7**



9 - ELECTRIC CONNECTORS

Solenoid valves are delivered without connectors. Connectors type EN 175301-803 (ex DIN 43650) for K1 connection can be ordered separately. See catalogue 49 000.

10 - OVERALL AND MOUNTING DIMENSIONS

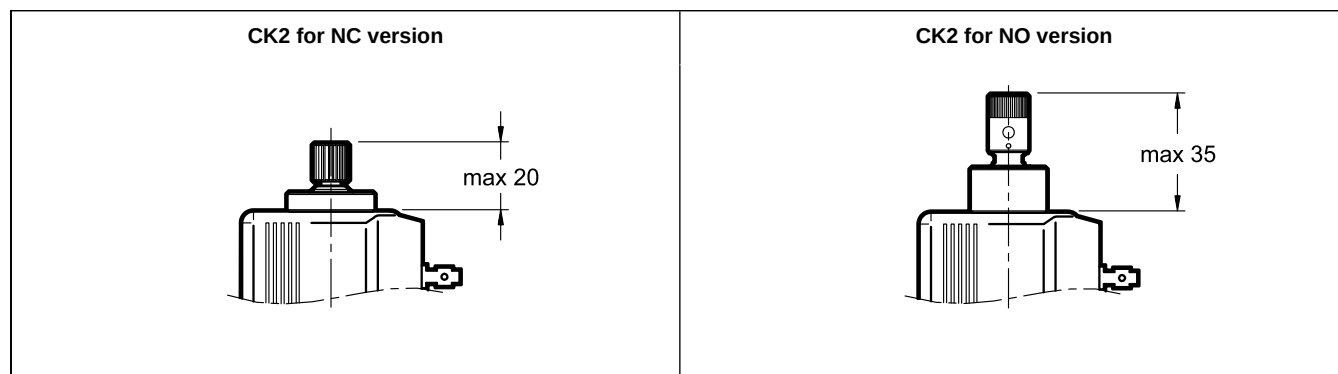


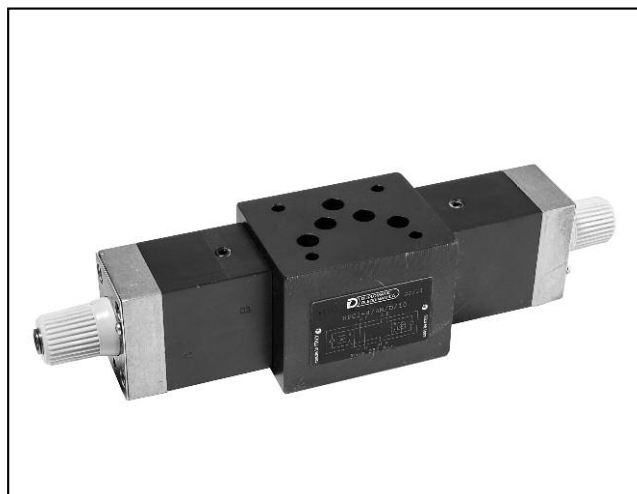
11 - MANUAL OVERRIDE

The switching solenoid valve can be delivered with push and twist manual override (CK2 code) or without any override.

The override is activated by pressing and turning the knob (clockwise for NO versions, anticlockwise for NC versions); it is deactivated by pressing and turning the knob again in the opposite direction. A small spring allows the knob to return to its initial position.

The shape is different depending on NC or NO version.





RPC1-*/4M

FLOW CONTROL VALVE

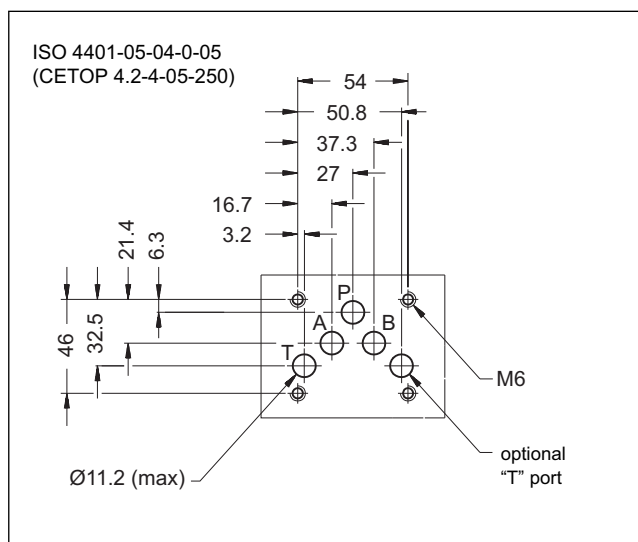
SERIES 10

MODULAR VERSION ISO 4401-05

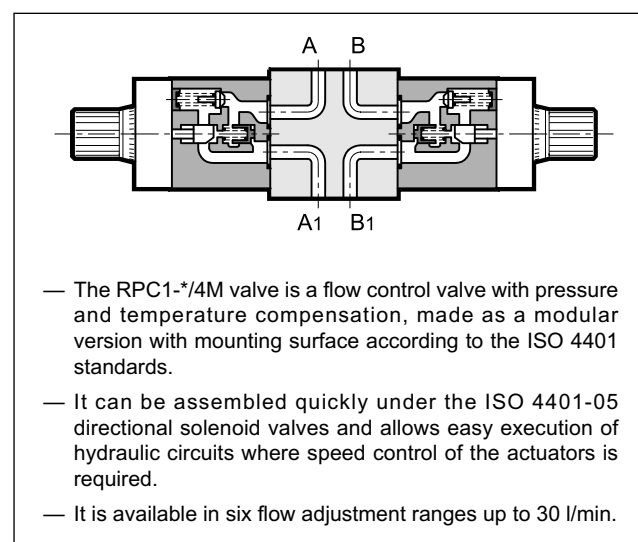
p max **250** bar

Q max (see table of performances)

MOUNTING INTERFACE



OPERATING PRINCIPLE

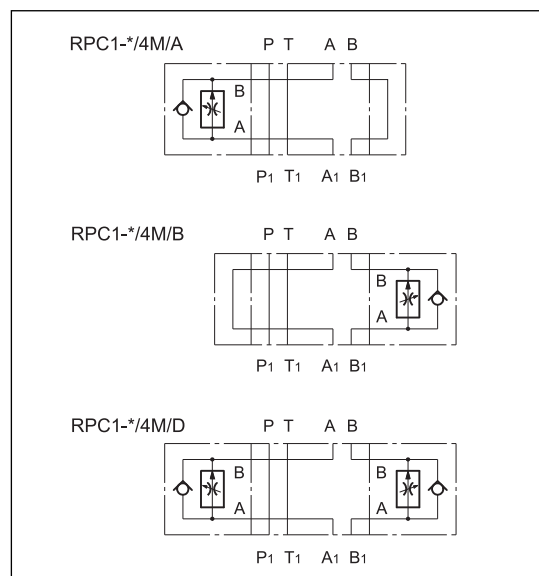


CONFIGURATIONS (see hydraulic symbols table and identification code - par. 1)

PERFORMANCES (measured with mineral oil of viscosity 36 cSt at 50°C)

Maximum operating pressure	bar	250
Maximum flow rate in controlled lines	l/min	1-4-10-16-22-30
Maximum flow rate in the free lines		100
Reverse free flow maximum flow rate		40
Ambient temperature range	°C	-20 / +60
Fluid temperature range	°C	-20 / +80
Fluid viscosity range	cSt	10 ÷ 400
Fluid contamination degree	According to ISO 4406:1999 class 20/18/15	
Recommended viscosity	cSt	25
Mass: RPC1-*/4M/ A-B RPC1-*/4M/ D only modular block ISO 4401-05 without flow control valves: RPC1-K/4M/D	kg	4,3
		5,6
		3

HYDRAULIC SYMBOLS



NOTE: Please see catalogue 32 200 for detailed information about the RPC1 flow control valve.

1 - IDENTIFICATION CODE

R	P	C	1	-		/	4	M	/		/	10	/	
----------	----------	----------	----------	----------	--	----------	----------	----------	----------	--	----------	-----------	----------	--

Pressure and temperature compensated flow control valve

Flow adjustment range:

1 = 1 l/min

4 = 4 l/min

10 = 10 l/min

K = only for ISO 4401-05 modular block supplied without flow control valves

16 = 16 l/min

22 = 22 l/min

30 = 30 l/min

Modular version

ISO 4401-05 size

Seals: omit for mineral oils

V = viton for special fluids

Series No. (the overall and mounting dimensions remain unchanged from 10 to 19)

A = control from chamber A of the actuator

B = control from chamber B of the actuator

D = control from chambers A and B of the actuator

(A and B configurations are not available in K version)

2 - HYDRAULIC FLUIDS

Use mineral oil-based hydraulic fluids HL or HM type, according to ISO 6743-4. For these fluids, use NBR seals. For fluids HFDR type (phosphate esters) use FPM seals (code V). For the use of other kinds of fluid such as HFA, HFB, HFC, please consult our technical department. Using fluids at temperatures higher than 80 °C causes a faster degradation of the fluid and of the seals characteristics.

The fluid must be preserved in its physical and chemical characteristics.

3 - OVERALL AND MOUNTING DIMENSIONS

